

Claims

1. A protector for an optical fiber probe designed for studying an object comprising:
a hollow sheath having a closed distal end and an open proximal end, the sheath allowing
for an optical fiber probe to be placed inside the sheath;

5 the closed distal end of the sheath being made as a protector window, the protector
window being at least partially optically transparent, and

an inner surface of the protector window being capable of forming a temporary adhesive
contact with an end face of a distal part of the optical fiber probe under a pressure of an axial
force exerted on the optical fiber probe placed inside the sheath.

10 2. The protector according to claim 1, wherein the protector window is
manufactured from a pliable and resilient material.

3. The protector according to claim 2, wherein the refractive index of the material of
15 the protector window at the operating wavelength is defined by the following relation:

$$N_a \cong (N_b * N_c)^{1/2}, \text{ where}$$

N_a is the refractive index of the material of the protector window;

N_b is the refractive index of the object being studied;

N_c is the refractive index of the material of the distal part of the optical fiber probe.

20 4. The protector according to claim 2, wherein the protector window is
manufactured from a cured optical gel.

5. The protector according to claim 1, wherein the protector window is made as a
25 pliable membrane.

6. The protector according to claim 1, wherein the protector further comprises a
hollow handle, the proximal end of the hollow sheath being interfaced with a distal end of the
hollow handle, the interior cavities of the sheath and the handle forming a common working
30 space for placing the optical fiber probe inside the working space.

7. The protector according to claim 6, wherein the handle is further equipped with a locking means for fixing the position of the optical fiber probe inside the working space.

8. The protector according to claim 1, wherein the hollow sheath is made pliable.

9. The protector according to claim 1, wherein the hollow sheath is made rigid.

10. The protector according to claim 1, wherein the optical fiber probe is part of a spectral imaging device.

11. The protector according to claim 1, wherein the optical fiber probe is part of a device for optical coherence tomography.

12. The protector according to claim 1, wherein the hollow sheath is made from a material that is at least partially optically transparent.

13. The protector according to claim 1, wherein the protector is made reusable.

14. The protector according to claim 1, wherein the protector is made disposable.

15. The protector according to claim 1, wherein the object being studied is a biological tissue.

16. The protector according to claim 1, wherein the object being studied is a biological tissue of a living body.

17. A protector for an optical fiber probe designed for studying an object comprising: a hollow sheath having a closed distal end and an open proximal end, the sheath allowing for an optical fiber probe to be placed inside the sheath;

the closed distal end of the sheath being made as a protector window, the protector window being at least partially optically transparent, the protector window having an inner surface and an outer surface and being configured as at least a bilayer structure, and

the inner surface of the protector window being capable of forming a temporary adhesive contact with an end face of a distal part of the optical fiber probe under a pressure of an axial force exerted on the optical fiber probe placed inside the sheath.

18. The protector according to claim 17, wherein the layer, one of whose surfaces makes the inner surface of the protector window, is manufactured from a pliable and resilient material.

19. The protector according to claim 17, wherein the layer, one of whose surfaces makes the outer surface of the protector window, is manufactured from a pliable and resilient material.

20. The protector according to claim 17, wherein the refractive indexes of the materials of the layers configuring the protector window, the refractive index of the object being studied, and the refractive index of the material of the distal part of the optical fiber probe have substantially equal values at the operating wavelength.

21. The protector according to claim 17, wherein at least the layer, one of whose surfaces makes the inner surface of the protector window, is manufactured from a cured optical gel.

22. The protector according to claim 17, wherein at least the layer, one of whose surfaces makes the outer surface of the protector window, is manufactured from a cured optical gel.

23. A protector for an optical fiber probe designed for studying an object comprising:
a hollow sheath having a closed distal end and an open proximal end, the sheath allowing for an optical fiber probe to be placed inside the sheath;

the closed distal end of the sheath being made as a protector window, the protector window being at least partially optically transparent, the protector window having an inner surface and an outer surface;

the inner surface of the protector window being capable of forming a temporary adhesive contact with an end face of a distal part of the optical fiber probe under a pressure of an axial force exerted on the optical fiber probe placed inside the sheath, and

the outer surface of the protector window being capable of forming a temporary adhesive contact with the object being studied under the pressure of the axial force exerted on the optical fiber probe placed inside the sheath.

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24. The protector according to claim 23, wherein the protector window is manufactured from a pliable and resilient material.

25. The protector according to claim 23, wherein the protector window is manufactured from a cured optical gel.

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